United States Patent [19]

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[54] **SHOT VOLUME AND CUSHION POINT CONTROL FOR INJECTION MOLDING APPARATUS**

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[52] **U.S. Cl.** **222/63**; 425/145

[51] **Int. Cl.** **B29f 1/02**

[58] **Field of Search** 425/145, 167; 222/63, 1, 222/413

[56] **References Cited**

UNITED STATES PATENTS

3,436,443	4/1969	Hutchinson	425/145 X
3,632,246	1/1972	Ichikawa et al.	222/413 UX
3,647,309	3/1972	Thompson	425/145 X
3,666,141	5/1972	Ma et al.	222/63 X
3,693,946	9/1972	Merritt	425/145 X
3,728,058	4/1973	Wheeler	222/413 UX
3,797,808	3/1974	Ma et al.	222/63

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[57] **ABSTRACT**

A simplified process controller for effecting the continued operation of an injection molding machine in a predetermined mode. A timer is started when the injection ram begins an injection stroke. When a first predetermined time has elapsed, it is assumed that the initial cushion point has been reached and the ram injection pressure is reduced to a holding value. At a subsequent time a comparison is made between a signal representing an actual final ram cushion point position, and another signal representing the desired position. An error signal is then generated and utilized to change the screwback and pullback positions of the ram. Simultaneous modification of the screwback and pullback points maintains a constant shot volume for each injection stroke.

In another embodiment the transition from injection to holding pressure is accomplished as a function of ram position rather than time. The error signal is then also utilized to control the point at which the pressure change occurs.

13 Claims, 2 Drawing Figures